

## The forest avifauna of the Uzungwa Mountains, Tanzania

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The significance of the forests of the Uzungwa Mountains as some of the most important areas for threatened and endemic forest birds in East Africa has only recently been realized. However, when a number of visits were paid to Mwanihana and Chita Forests on the eastern scarp of the mountain range between 1981 and 1984 it became clear that the forested areas of this mountain block have one of the highest diversities of forest birds in East Africa. The avifauna includes an endemic species and a high number of endemic and near-endemic species belonging to the East Coast Escarpment Group as defined by Stuart *et al.* (in press) and the Tanganyika–Nyasa Montane Forest Group as defined by Moreau (1966). The mountain forests constitute the most important strongholds for several of the rare species belonging to those zoogeographical bird communities (Stuart *et al.* 1981, Stuart & Jensen 1981, Jensen & Stuart 1982, Jensen 1983, Collar & Stuart 1985, Stuart *et al.* 1987, Stuart *et al.* in press). In a review of key forests for threatened birds in the Afrotropical and Malagasy Regions, the Uzungwa Mountains ranked ninth in ornithological importance among the 71 forest areas dealt with in the review (Collar & Stuart 1988).

Stuart *et al.* (1987) gave a description of the altitudinal zonation of the forest birds in Mwanihana Forest in the northern part of the Uzungwas, with detailed notes on selected species, as well as discussions of zoogeographical and distributional problems. Since then, ornithological field work has been carried out in the southern part of the Uzungwas, mainly in Chita Forest Reserve but also in the scarp forest at Kigogo. In this paper we review the forest avifauna of the Uzungwa Mountains drawing together all relevant ornithological records that we have been able to locate, published as well as unpublished, thus including the results from the study of the forest avifauna of Chita Forest Reserve.

This paper deals with the zoogeographical and altitudinal distribution of the forest birds in the Uzungwa Mountains, and discusses the distributional patterns identified within the Uzungwa forests areas so far visited (see Fig. 1). Taxonomic notes on the genus *Modulatrix* have also been included.

A zoogeographical analysis of the avifauna of the Uzungwa Mountains in relation to other forest avifaunas in the whole of East Africa has been carried out by Stuart *et al.* (in press).

### Study area

The Uzungwa Mountains as defined for the purpose of this paper cover some 10 000 km<sup>2</sup> around the coordinates 8° 20' S, 35° 50' E, stretching 200 km from north-east to south-west in eastern Tanzania, see also Fig. 1. From the plains which include the huge Selous Game Reserve the mountains rise steeply from a level of 300 m to an undulating upland at 1200–1500 m with peaks reaching 2600 m at Luhombero and several peaks reaching over 2000 m. The forests of the Uzungwas do not form a continuous cover, but are isolated in blocks separated by woodland, scrub, grassland or, increasingly so in the west, by cultivation (Rodgers 1981, Rodgers & Homewood 1982). Parts of the south-east facing scarp, however, have a continuous wet forest cover from lowland forest at 300 m through intermediate forest to montane forest, and low-growing

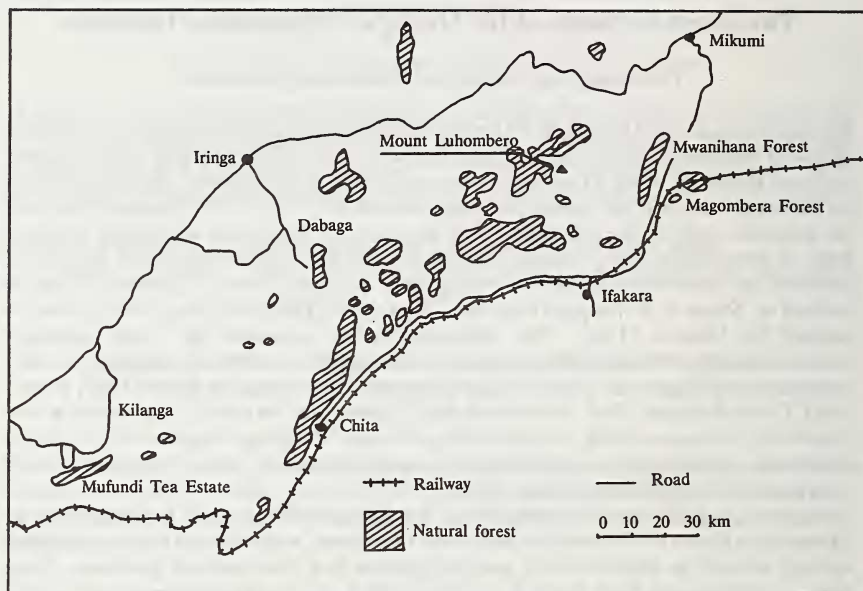


Figure 1. Map of southeastern Tanzania

*Erica*- and *Podocarpus*-forest on exposed ridges (Rodgers & Homewood 1982, Collar & Stuart 1988). The lowland forest Magombera, on the edge of the Selous Game Reserve, was once continuous with Mwanihana Forest but became separated by the establishment of Kilombero Sugar Estate. Rodgers & Homewood (1982) give a figure of 450 km<sup>2</sup> of the mountains being forested.

The mountain range shows considerable variation in annual rainfall with values of over 2000 mm a year along the eastern scarp, whereas the upland plateau forests may receive only 1200 mm and the dry western slopes with rain shadow have mean annual rainfall of less than 600 mm, supporting deciduous thicket communities (Rodgers 1981). Because of this variation in rainfall pattern, the forests of the upland plains are of a much drier type than the forests on the scarp at the same altitude. Relatively dry forest is found on Mount Luhombero, at Dabaga and Kigogo Forest near Mufindi Tea Estate (Fig. 1).

Both Mwanihana and Chita show a high variation in forest structure. Tall tree canopy with tree height up to 50 m are found in intermediate altitude levels between 700 m and 1600 m especially in ravines and along forest streams. Ground cover is usually rich in herbs, ferns and low bushes and can be very dense along streams. Forest stratification is pronounced with large creepers forming mid-stratum thickets especially near broken canopy cover and with a well developed understorey. Epiphytes, both vascular and non-vascular, are abundant. Further down on the scarp the forest gets somewhat impoverished because of selective tree cutting for firewood and timber (especially in

Mwanihana) and due to a lower rainfall. Because of drier growth conditions, ground cover can be sparse leaving large patches of carpets of dead leaves among an otherwise grass-dominated ground vegetation.

On the rifts in intermediate altitudes tree canopy is lower and the ground becomes more sparsely vegetated with larger patches of litter without herbs. Stratification is less developed, but mid-stratum thickets formed by creepers are still commonly found. On the rifts in the highest altitudes from 1600 m and up the forest is usually low and single-stratified, with canopy heights down to 8–10 m. Epiphyte cover of stems and branches is well developed but consists of small vascular species and is dominated by lichens and mosses. Ground cover can be very sparse. For further details, see Rodgers & Homewood (1982) and Collar & Stuart (1988).

The eastern scarp reaches its upper limits at around 1800 m in both Mwanihana and Chita. Higher parts are found further inland, where mean rainfall is lower. The microclimate changes rapidly near the scarp rifts, where especially the wind factor becomes dominant in reducing the humidity and, thus perhaps, explaining the montane-like forest type at these altitudes.

### The ornithological exploration of the Uzungwas

The ornithological investigations of the wet and species-rich east-facing scarp forests did not start until 1981 after the surprising discovery in 1979 of a new and very isolated subspecies of the Crested Mangabey *Cercocebus galeritus sanjei* (Homewood & Rodgers 1981).

Almost 100 years earlier, however, the first forest birds were recorded from the dry plateau forests of the Uzungwas. In 1897–98 Stierling collected a number of forest birds from the central Uzungwas (Uhehe), probably in the Dabaga area, and shipped the specimens to Germany for identification. Here A. Reichenow described several new forms from this collection of which two are still accepted as good subspecies, *Alcippe abyssinica stierlingi* (Reichenow 1898) and *Zosterops senegalensis stierlingi* Reichenow 1899.

In 1899 Reichenow described more new forms of forest birds from the Uzungwas, this time from a collection made by Fülleborn. Fülleborn collected his specimens at Kilanga in the southern part of the Uzungwas, probably in 1898, but no exact dates are given on the labels. Two of these forms are still considered valid subspecies, *Nectarinia mediocris fueleborni* Reichenow 1899 and *Andropadus tephrolaemus chlorigula* Reichenow 1899.

The next ornithologist to report on forest birds from the Uzungwa Mountains was Loveridge who paid a brief visit to Dabaga in December 1929–January 1930 (Bangs & Loveridge 1933). A number of new subspecies were described from this collection expedition of which two are still accepted, *Francolinus squamatus uzungwensis* Bangs & Loveridge 1931 and *Apalis thoracica injectiva* Bangs & Loveridge 1931. The francolin, however, is not really a forest species and is not mentioned again in this paper.

Between August and November 1962 G. Heinrich made an important collection of forest birds from the Uzungwa Mountains, later reported in Ripley & Heinrich (1966, 1969). Among the highlights were the discovery of *Sheppardia (Aethya) lowei* at Dabaga and a new subspecies of *Orthotomus metopias*, *O.m. pallidus*. Ripley & Heinrich (1966) also described a new subspecies of the Bar-throated Apalis *Apalis thoracica iringae* from the Uzungwas, but in this paper this form is treated synonymous with *A.t. injectiva*.

An unpublished check-list of birds recorded at Mufindi and in Kigogo Forest was produced by C. Paget-Wilkes in 1970 and was revised by A. Beakbane and E. Baker in 1983.

In August–September 1979 the Oxford Expedition to Tanzania conducted field studies of forest birds in the Mufindi area (van der Willigen & Lovett 1980) and in December 1979 R. Stjernstedt and D. Moyer made a brief visit to Mount Luhombero (R. Stjernstedt & D. Moyer *in litt.*, D. Moyer *in litt.*). In the 1980s E. Baker and A. Beakbane made systematic studies of the avifauna in the Mufindi area, including the Kigogo Forest.

During the 1980s the authors, together with Simon N. Stuart, paid a number of visits to various forests areas in the Uzungwas, as shown in Table 1.

Table 1. *Time (in weeks) spent in different forest areas in the Uzungwa Mountains by the authors and S.N. Stuart*

|         | Mwanihana | Magombera | Chita | Kigogo |
|---------|-----------|-----------|-------|--------|
| 1981    |           |           |       |        |
| Jan     | 1         |           |       |        |
| Jul–Aug | 2         |           |       |        |
| Sep     | 1         |           |       |        |
| 1982    |           |           |       |        |
| Jul–Aug | 6         |           |       |        |
| 1984    |           |           |       |        |
| Aug     | 2         |           |       |        |
| Sep     |           | 2         |       |        |
| Oct     |           |           |       | 2      |
| Oct–Nov |           |           | 5     |        |

## Results

In Table 2 we present all records of forest birds within surveyed localities in the Uzungwa Mountains, with their altitudinal distribution. Altitudinal seasonal migration ranges for a number of species (see e.g. Stuart *et al.* 1987, Dowsett-Lemaire 1989) are given in the table which express the maximum altitudinal span in which any one species was recorded. At any particular time of the year, however, the distribution will be confined to only a part of the given figure range, at least for species that make seasonal altitudinal movements.

The table draws on records kindly given to us by D. Moyer (some of the records from Chita, *in litt.*), R. Stjernstedt & D. Moyer (all records from the Luhombero, *in litt.*) and E. Baker (some of the records from Kigogo, pers. comm.).

Table 2. Systematic list of the forest birds in the Uzungwa Mountains, showing maximum altitudinal range (m above sea level—see 'Results'), following the nomenclature used by Britton (1980) except where otherwise stated. In some cases we have chosen to follow recent taxonomic revisions namely of Dowsett & Dowsett-Lemaire (1983) marked A, Franzmann (1983) marked B, James & Wattle (1983a, b) marked C and Jensen (1989) marked D

|                                | Magombera<br>Mwanihana | Chita     | Kigogo    | Dabaga  | Luhombero | Uzungwas  |
|--------------------------------|------------------------|-----------|-----------|---------|-----------|-----------|
| African Black Duck             |                        |           | c. 1800   |         |           | c. 1800   |
| <i>Anas sparsa</i>             |                        |           |           |         |           |           |
| S. Banded Snake Eagle          | 300–1000               |           |           |         |           | 300–1000  |
| <i>Circaetus fasciolatus</i>   |                        |           |           |         |           |           |
| Great Sparrowhawk              | 1700–1800              |           |           |         |           | 1700–1800 |
| <i>Accipiter melanoleucus</i>  |                        |           |           |         |           |           |
| Little Sparrowhawk             | 300                    | 1400–1700 | 1830      |         |           | 300–1830  |
| <i>A. minullus</i>             |                        |           |           |         |           |           |
| African Goshawk                | 300–1800               | 1300–1700 | 1830      |         |           | 300–1830  |
| <i>A. tachiro</i>              |                        |           |           |         |           |           |
| Mountain Buzzard               | 1300–1850              | 1450–1500 | 1830–1900 |         |           | 1300–1900 |
| <i>Buteo oreophilus</i> —C     |                        |           |           |         |           |           |
| Crowned Eagle                  | 300–1800               | 350–1700  | 1830      |         | c. 1850   | 300–1850  |
| <i>Stephanoaetus coronatus</i> |                        |           |           |         |           |           |
| Crested Guineafowl             | 300–1400               |           |           |         |           | 300–1400  |
| <i>Guttera edouardi</i>        |                        |           |           |         |           |           |
| Lemon Dove                     | 300–1800               | 1050–1450 | 1830–1900 | c. 1800 |           | 300–1900  |
| <i>Aplopelia larvata</i>       |                        |           |           |         |           |           |
| Olive Pigeon                   | 400–1800               | 1450–1700 | 1830–1900 |         | c. 1850   | 400–1900  |
| <i>Columba arquatrix</i>       |                        |           |           |         |           |           |
| Bronze-naped Pigeon            | 700–1700               | 1400–1700 | 1830–1900 |         |           | 700–1900  |
| <i>C. delegorguei</i>          |                        |           |           |         |           |           |
| Tambourine Dove                | 300–1600               | 750–1500  | 1830–1900 |         |           | 300–1900  |
| <i>Turtur tympanistris</i>     |                        |           |           |         |           |           |
| Brown-necked Parrot            | 300                    |           |           |         |           | 300       |
| <i>Poicephalus robustus</i>    |                        |           |           |         |           |           |
| Livingstone's Turaco           | 300–1800               | 1050–1700 | 1830–1900 | c. 1800 |           | 300–1900  |
| <i>Tauraco livingstonii</i>    |                        |           |           |         |           |           |
| Barred Long-tailed Cuckoo      | 1000–1500              | 350–1700  | 1830–1900 | c. 1800 |           | 350–1900  |
| <i>Cercococcyx montanus</i>    |                        |           |           |         |           |           |
| Klaas' Cuckoo                  | 300–1300               |           |           |         |           | 300–1300  |
| <i>Chrysococcyx klaas</i>      |                        |           |           |         |           |           |
| Yellowbill                     | 300–800                | 1300      |           |         |           | 300–1300  |
| <i>Ceuthmochares aereus</i>    |                        |           |           |         |           |           |
| African Wood Owl               | 300–1600               | 750–1500  | 1830–1900 |         |           | 300–1900  |
| <i>Ciccaba woodfordii</i>      |                        |           |           |         |           |           |
| Böhm's Spinetail               | 300–900                |           |           |         |           | 300–900   |
| <i>Neafraapus boehmi</i>       |                        |           |           |         |           |           |
| Mottle-throated Spinetail      | 300–1500               |           |           |         |           | 300–1500  |
| <i>Telacanthura ussheri</i>    |                        |           |           |         |           |           |
| Narina's Trogon                | 300–650                | 1050      |           |         |           | 300–1050  |
| <i>Apaloderma narina</i>       |                        |           |           |         |           |           |
| Bar-tailed Trogon              | 800–1700               | 1400–1500 |           | c. 1800 |           | 800–1800  |
| <i>A. vittatum</i>             |                        |           |           |         |           |           |
| Half-collared Kingfisher       | 400                    | 1050      |           |         |           | 400–1050  |
| <i>Alcedo semitorquata</i>     |                        |           |           |         |           |           |
| Green Wood Hoopoe              | 300–1800               |           |           |         |           | 300–1800  |
| <i>Phoeniculus purpureus</i>   |                        |           |           |         |           |           |



|                                  | Magombero<br>Mwanihana | Chita     | Kigogo    | Dabaga  | Luhombero | Uzungwas  |
|----------------------------------|------------------------|-----------|-----------|---------|-----------|-----------|
| Silvery-cheeked Hornbill         | 300–1800               | 350–1700  | 1700–1830 |         | c. 1850   | 300–1850  |
| <i>Bycanistes brevis</i>         |                        |           |           |         |           |           |
| Trumpeter Hornbill               | 300–400                | 350–1400  |           |         |           | 300–1400  |
| <i>B. bucinator</i>              |                        |           |           |         |           |           |
| Crowned Hornbill                 | 300–700                | 350–1500  | 1830      |         |           | 300–1830  |
| <i>Tockus alboterminatus</i>     |                        |           |           |         |           |           |
| White-eared Barbet               | 300–400                |           |           |         |           | 300–400   |
| <i>Buccanodon leucotis</i>       |                        |           |           |         |           |           |
| Green Barbet                     | 400–1650               | 750–1700  |           |         |           | 400–1700  |
| <i>B. olivaceum</i>              |                        |           |           |         |           |           |
| Yellow-rumped Tinkerbird         | 300–1300               | 750–1500  | 1700      |         |           | 300–1700  |
| <i>Pogoniulus bilineatus</i>     |                        |           |           |         |           |           |
| Moustached Green Tinkerbird      | 1300–1800              | 1400–1700 | 1830      | c. 1800 | c. 1850   | 1300–1850 |
| <i>P. leucomystax</i>            |                        |           |           |         |           |           |
| Eastern Honeybird                | 1500–1600              |           |           |         |           | 1500–1600 |
| <i>Prodotiscus zambesiae</i>     |                        |           |           |         |           |           |
| Golden-tailed Woodpecker         | 400–1200               |           |           |         |           | 400–1200  |
| <i>Campethera abingoni</i>       |                        |           |           |         |           |           |
| Little Spotted Woodpecker        | 300–700                |           |           |         |           | 300–700   |
| <i>C. caillautii</i>             |                        |           |           |         |           |           |
| Cardinal Woodpecker              | 300–1200               | 1500–1700 | 1830      | c. 1800 |           | 300–1830  |
| <i>Dendropicos fuscescens</i>    |                        |           |           |         |           |           |
| Olive Woodpecker                 | 1400–1800              | 1400      | 1830      |         |           | 1400–1830 |
| <i>Mesopicos griseocephalus</i>  |                        |           |           |         |           |           |
| African Broadbill                | 600–1850               | 350–1700  |           |         |           | 350–1850  |
| <i>Smithornis capensis</i>       |                        |           |           |         |           |           |
| Square-tailed Drongo             | 300–1800               | 750–1700  |           |         |           | 350–1850  |
| <i>Dicrurus ludwigii</i>         |                        |           |           |         |           |           |
| Green-headed Oriole              | 300–1700               |           |           |         |           | 300–1700  |
| <i>Oriolus chlorocephalus</i>    |                        |           |           |         |           |           |
| African Hill Babbler             |                        | 1400–1700 | 1830–1900 | c. 1800 | c. 1850   | 1400–1900 |
| <i>Alcippe abyssinica</i>        |                        |           |           |         |           |           |
| Pale-breasted Illadopsis         |                        | 1400–1700 |           |         |           | 1400–1700 |
| <i>Trichastoma rufipennis</i>    |                        |           |           |         |           |           |
| Spot-throat Modulatrix           | 1400–1700              | 1400–1700 | 1700–1830 | c. 1800 | c. 1850   | 1400–1850 |
| <i>Modulatrix stictigula</i>     |                        |           |           |         |           |           |
| Dappled Mountain Modulatrix      | 1300–1600              | 1400–1700 |           |         |           | 1300–1700 |
| <i>M. orostruthus</i>            |                        |           |           |         |           |           |
| Black Cuckoo Shrike              | 300–1000               | 1050–1400 | 1830      | c. 1800 |           | 300–1830  |
| <i>Campephaga flava</i>          |                        |           |           |         |           |           |
| Purple-throated Cuckoo Shrike    | 700                    |           |           |         |           | 700       |
| <i>C. quiscalina</i>             |                        |           |           |         |           |           |
| Grey Cuckoo Shrike               | 400–1800               | 1400      |           |         |           | 400–1800  |
| <i>Coracina caesia</i>           |                        |           |           |         |           |           |
| Shelley's Greenbul               | 900–1800               | 1050–1700 | 1700–1900 | c. 1800 | c. 1850   | 900–1900  |
| <i>Andropadus masukuensis</i>    |                        |           |           |         |           |           |
| Stripe-cheeked Greenbul          | 800–1800               | 1300–1700 | 1700–1900 |         | c. 1850   | 800–1900  |
| <i>A. milanjensis</i>            |                        |           |           |         |           |           |
| Mountain Greenbul                | 1600–1800              | 1400–1700 | 1700–1830 | c. 1800 | c. 1850   | 1400–1850 |
| <i>A. tephrolaemus</i>           |                        |           |           |         |           |           |
| Little Greenbul                  | 300–1400               | 350–1700  | 1700–1830 |         | c. 1850   | 300–1850  |
| <i>A. virens</i>                 |                        |           |           |         |           |           |
| Yellow-bellied Greenbul          | 300                    |           |           |         |           | 300       |
| <i>Chlorocichla flaviventris</i> |                        |           |           |         |           |           |
| Nicator                          |                        | 350–1300  |           |         |           | 350–1300  |
| <i>Nicator chloris</i>           |                        |           |           |         |           |           |
| Fischer's Greenbul               | 300–600                | 750       |           |         |           | 300–750   |
| <i>Phyllastrephus fischeri</i>   |                        |           |           |         |           |           |

|                                   | Magombera<br>Mwanihana | Chita     | Kigogo    | Dabaga  | Luhombero | Uzungwas  |
|-----------------------------------|------------------------|-----------|-----------|---------|-----------|-----------|
| Yellow-streaked Greenbul          | 300-1800               | 1050-1700 |           | c. 1800 |           | 300-1800  |
| <i>P. flavostriatus</i>           |                        |           |           |         |           |           |
| Olive Mountain Greenbul           | 1000-1800              | 750-1700  | 1900      | c. 1800 |           | 750-1900  |
| <i>P. placidus</i>                |                        |           |           |         |           |           |
| Eastern Bearded Scrub Robin       | 300                    |           |           |         |           | 300       |
| <i>Cercotrichas quadrivirgata</i> |                        |           |           |         |           |           |
| White-chested Alethe              | 300-1700               | 750-1700  | 1700-1830 | c. 1800 |           | 300-1830  |
| <i>Alethe fuelleborni</i>         |                        |           |           |         |           |           |
| Red-capped Robin Chat             | 300-600                | 750-1300  | 1700      |         |           | 300-1700  |
| <i>Cossypha natalensis</i>        |                        |           |           |         |           |           |
| Olive-flanked Ground Robin        |                        | 1400      | 1700-1830 | c. 1800 |           | 1400-1830 |
| <i>C. anomala</i>                 |                        |           |           |         |           |           |
| Swynnerton's Forest Robin         | 1000-1200              | 1050-1700 |           |         |           | 1000-1700 |
| <i>Swynnertonia swynnertonii</i>  |                        |           |           |         |           |           |
| White-starred Forest Robin        | 300-1800               | 750-1700  | 1700-1900 | c. 1800 | c. 1850   | 300-1900  |
| <i>Pogonocichla stellata</i>      |                        |           |           |         |           |           |
| Sharpe's Akalat                   | 600-1800               | 1050-1700 |           | c. 1800 | c. 1850   | 600-1850  |
| <i>Sheppardia sharpei</i>         |                        |           |           |         |           |           |
| Iringa Ground Robin               |                        | 1400-1700 | 1700-1830 | c. 1800 |           | 1400-1830 |
| <i>S. lowei</i> —D                |                        |           |           |         |           |           |
| Olive Thrush                      | 1400-1600              | 1400-1700 | 1830      | c. 1800 |           | 1400-1830 |
| <i>Turdus olivaceus</i> —A        |                        |           |           |         |           |           |
| Orange Ground Thrush              | 300-1600               | 1050-1700 | 1830-1900 |         |           | 300-1900  |
| <i>T. gurneyi</i>                 |                        |           |           |         |           |           |
| White-winged Apalis               | 1000-1500              | 1300-1500 |           |         |           | 1000-1500 |
| <i>Apalis chariessa</i>           |                        |           |           |         |           |           |
| Brown-headed Apalis               | 1800                   | 1400      | 1830      | c. 1800 | c. 1850   | 1400-1850 |
| <i>A. alticola</i>                |                        |           |           |         |           |           |
| Black-headed Apalis               | 300-1700               | 750-1700  |           |         |           | 300-1700  |
| <i>A. melanocephala</i>           |                        |           |           |         |           |           |
| Yellow-breasted Apalis            | 300-850                | 750       |           |         |           | 300-850   |
| <i>A. flavidia</i>                |                        |           |           |         |           |           |
| Chapin's Apalis                   | 1100-1850              | 1400-1700 | 1830      | c. 1800 |           | 1100-1850 |
| <i>A. chapini</i> —A              |                        |           |           |         |           |           |
| Bar-throated Apalis               | 1600-1800              | 1400-1700 | 1830-1900 | c. 1800 | c. 1850   | 1400-1900 |
| <i>A. thoracica</i>               |                        |           |           |         |           |           |
| Mrs Moreau's Warbler              | 1300-1600              |           |           |         |           | 1300-1600 |
| <i>Baithmocercus winifredae</i>   |                        |           |           |         |           |           |
| Evergreen Forest Warbler          | 1400-1800              | 1300-1700 | 1700-1900 | c. 1800 | c. 1850   | 1300-1900 |
| <i>Bradypterus mariae</i> —A      |                        |           |           |         |           |           |
| Grey-backed Camaroptera           | 300-1000               | 750-1450  |           |         |           | 300-1450  |
| <i>Camaroptera brachyura</i>      |                        |           |           |         |           |           |
| Kretschmer's Longbill             | 300-1300               |           |           |         |           | 300-1300  |
| <i>Macrosphenus kretschmeri</i>   |                        |           |           |         |           |           |
| Red-capped Forest Warbler         |                        | 1400-1700 | 1700-1830 | c. 1800 | c. 1850   | 1500-1850 |
| <i>Oriolomus metopias</i>         |                        |           |           |         |           |           |
| Y-throated Woodland Warbler       | 800-1800               | 1400      |           |         |           | 800-1800  |
| <i>Phylloscopus ruficapilla</i>   |                        |           |           |         |           |           |
| Dusky Flycatcher                  | 400-1700               | 1400-1500 | 1830      | c. 1800 | c. 1850   | 400-1850  |
| <i>Muscicapa adusta</i>           |                        |           |           |         |           |           |
| Ashy Flycatcher                   | 300-1000               | 750-1050  |           |         |           | 300-1050  |
| <i>M. caerulescens</i>            |                        |           |           |         |           |           |
| Lead-coloured Flycatcher          | 300-1400               |           |           |         |           | 300-1400  |
| <i>Myioparus plumbeus</i>         |                        |           |           |         |           |           |
| Forest Batis                      | 700-1800               | 1050-1700 | 1700-1900 | c. 1800 | c. 1850   | 700-1900  |
| <i>Batis mixta</i>                |                        |           |           |         |           |           |

|                                     | Magombera<br>Mwanihana | Chita     | Kigogo    | Dabaga  | Luhombero | Uzungwas  |
|-------------------------------------|------------------------|-----------|-----------|---------|-----------|-----------|
| Black and White Flycatcher          | 300-700                |           |           |         |           | 300-700   |
| <i>Bias musicus</i>                 |                        |           |           |         |           |           |
| Livingstone's Flycatcher            | 600                    |           |           |         |           | 600       |
| <i>Erythrocerus livingstonei</i>    |                        |           |           |         |           |           |
| Paradise Flycatcher                 | 300-1800               | 750-1500  | 1830      |         |           | 300-1830  |
| <i>Terpsiphone viridis</i>          |                        |           |           |         |           |           |
| White-tailed Crested Flycatcher     | 600-1800               | 1300-1700 | 1700-1900 | c. 1800 | c. 1850   | 600-1900  |
| <i>Elminia albonotatus</i> —A       |                        |           |           |         |           |           |
| Crested Flycatcher                  | 300-1100               | 750-1400  |           |         |           | 300-1400  |
| <i>Trochocercus cyanomelas</i>      |                        |           |           |         |           |           |
| Black-backed Puffback               | 300-1500               | 750-1700  |           |         | c. 1850   | 300-1850  |
| <i>Dryoscopus cubla</i>             |                        |           |           |         |           |           |
| Fülleborn's Black Boubou            | 1200-1800              | 1050-1750 | 1700-1900 | c. 1800 |           | 1050-1900 |
| <i>Laniarius fuelleborni</i>        |                        |           |           |         |           |           |
| Black-fronted Bush Shrike           | 600-1700               | 1300-1500 | 1830-1900 | c. 1800 |           | 600-1900  |
| <i>Malacnotus multicolor</i>        |                        |           |           |         |           |           |
| Retz's Helmet Shrike                | 300-400                |           |           |         |           | 300-400   |
| <i>Prionops retzii</i>              |                        |           |           |         |           |           |
| Chestnut-fronted Helmet Shrike      | 300                    |           |           |         |           | 300       |
| <i>P. scopifrons</i>                |                        |           |           |         |           |           |
| Waller's Chestnut-w Starling        | 1000-1800              | 1050-1700 | 1700-1900 |         |           | 1000-1900 |
| <i>Onychognathus walleri</i>        |                        |           |           |         |           |           |
| Kenrick's Starling                  | 1500                   | 1700      | 1700-1900 |         |           | 1000-1900 |
| <i>Poeoptera kenricki</i>           |                        |           |           |         |           |           |
| Collared Sunbird                    | 300-1500               | 750-1700  | 1830      | c. 1800 |           | 300-1830  |
| <i>Anthreptes collaris</i>          |                        |           |           |         |           |           |
| Uluguru Violet-b Flycatcher         | 300-1300               | 750-1050  |           |         |           | 300-1300  |
| <i>A. neglectus</i>                 |                        |           |           |         |           |           |
| Banded Green Sunbird                | 1000                   |           |           |         |           | 1000      |
| <i>A. rubritorques</i>              |                        |           |           |         |           |           |
| Double-collared Sunbird             | 1500-1800              | 1400      | 1700-1900 | c. 1800 | c. 1850   | 1500-1900 |
| <i>Nectarinia moreaui/mediocris</i> |                        |           |           |         |           |           |
| Olive Sunbird                       | 300-1800               | 350-1700  | 1700-1830 |         | c. 1850   | 300-1850  |
| <i>N. olivacea</i>                  |                        |           |           |         |           |           |
| Rufous-winged Sunbird               | 600-1700               |           |           |         |           | 600-1700  |
| <i>N. rufipennis</i>                |                        |           |           |         |           |           |
| Yellow White-eye                    | 1000-1700              | 1300-1700 | 1700-1900 | c. 1800 | c. 1850   | 1000-1900 |
| <i>Zosterops senegalensis</i>       |                        |           |           |         |           |           |
| Dark-backed Weaver                  | 300-1800               | 750-1700  |           | c. 1800 |           | 300-1800  |
| <i>Ploceus bicolor</i>              |                        |           |           |         |           |           |
| Usambara Weaver                     | 1100-1700              | 1500      |           |         |           | 1100-1700 |
| <i>P. nicolli</i> —B                |                        |           |           |         |           |           |
| Red-faced Crimson-wing              | 900-1800               | 1400-1700 | 1700-1830 | c. 1800 |           | 900-1830  |
| <i>Cryptospiza reichenovii</i>      |                        |           |           |         |           |           |
| Peters' Twinspot                    | 300                    |           |           |         |           | 300       |
| <i>Hypargos niveoguttatus</i>       |                        |           |           |         |           |           |
| Green-backed Twinspot               | 1000                   | 750       |           |         |           | 750-1000  |
| <i>Mandingoa nitidula</i>           |                        |           |           |         |           |           |
| Lesser Seed-cracker                 |                        |           | 1830      |         |           | 1830      |
| <i>Pyrenestes minor</i>             |                        |           |           |         |           |           |
| Thick-billed Seed-eater             |                        | 1700      | 1830      | c. 1800 |           | 1700-1830 |
| <i>Serinus burtoni</i>              |                        |           |           |         |           |           |
| Oriole Finch                        |                        |           | 1700      |         |           | 1700      |
| <i>Linurgus olivaceus</i>           |                        |           |           |         |           |           |



### Notes on selected species

In this section notes on selected species are given. The selection of species has been made with reference to substantial new distributional and zoogeographical information, especially where the field work so far carried out in the Uzungwas has shed new light on the distribution of the rarer or more local forest bird species.

For further details references are given under the various species. In Stuart *et al.* (1987) notes on an additional number of forest species were given, based on the findings from the field work in Mwanihana Forest.



Figure 2. *Modulatrix orostruthus*, Chita Forest, 1984 (Photo: F. P. Jensen)

#### Dappled Mountain Modulatrix *Modulatrix orostruthus*

The taxonomy of this species has been the subject of much controversy. Originally described as a greenbul under the name *Phyllastrephus orostruthus* (Vincent 1933) it was reclassified as *M. orostruthus* as a thrush together with its close relative, the Spot-throat *M. stictigula*, by Benson & Irwin (1975). Recently, Irwin & Clancey (1986) established a new genus, *Arcanator*, for the Dappled Mountain Modulatrix. However, we believe both *Modulatrix* species should in fact be placed among the babblers because of the lack of a 'turdine thumb' in the syringeal morphology (Ames 1975, pers. obs.), the lack of a spotted juvenile plumage in both species (pers. obs.), and their general behaviour in the field and when in the hand. We therefore propose that the genus *Modulatrix* is placed among the babblers and close to the monotypic Timaliid genus *Kakamega* which they both resemble in size, general plumage character and in behaviour of caught birds in the hand (pers. obs.). Despite the obvious differences of the adult plumages in the two species we tentatively place both species in the same genus on basis on the otherwise close structural and habitual similarities. We also suggest that the English name of the two species are changed to Dabbled Mountain Modulatrix and Spot-throat Modulatrix. The Dappled Mountain Modulatrix has been believed to be one of the rarest birds in Africa (Britton 1980) and known only from a few isolated mountain

forest areas in Eastern Africa. It was first described from Mount Namuli in northern Mozambique by Vincent (1933) where a single bird was collected and another seen at c. 1450 m. There are no subsequent records from this locality. In 1935 Moreau (1935) described the subspecies *amani* from the East Usambara Mountains. Only very few individuals have since been recorded from this locality. In 1981 a third subspecies, *sanjei*, was discovered in Mwanihana Forest (Jensen & Stuart 1982). Subsequent studies in this forest have established that it is a rare bird with an altitudinal range from 1300 m to 1600 m (Stuart *et al.* 1987). In 1984 a fourth population of the Dappled Mountain Modulatrix was located in Chita Forest, belonging to the subspecies *sanjei*. Surprisingly it appeared to be a common forest inhabitant at this locality, between 1450 m and 1700 m, and Chita Forest is therefore likely to hold the largest population of this species. In the span of 11 days 13 individuals were netted, including one juvenile.

#### Pale-breasted Illadopsis *Trichastoma rufipennis*

A population of this species was surprisingly discovered in the montane parts of Chita Forest at 1450 m to 1700 m where it appeared to be fairly common. The Uzungwa population belongs to the subspecies *distans*, previously thought to be restricted to Zanzibar and low and middle elevations of the Usambaras, Nguru and Uluguru Mountains (Britton 1980). The discovery of the Illadopsis at Chita represents the first record of the genus in the Uzungwa Mountains.



Figure 3. *Trichastoma rufipennis*, Chita Forest, 1984 (Photo: F. P. Jensen)

#### Fischer's Greenbul *Phyllastrephus fischeri*

This greenbul is common in Magombera Forest at 300 m and has been recorded once in Mwanihana Forest at 600 m. In Chita Forest we found it to be fairly common at 750 m, where it formed mixed flocks with the Olive Mountain Greenbul (*Phyllastrephus placidus*). This is the highest altitude Fischer's Greenbul ever has been recorded, and the first time it has been found allopatric with the Olive Mountain Greenbul, with which was previously thought to be conspecific (Hall & Moreau 1970).

Fischer's Greenbul was mainly found in the ground stratum of the forest, usually in small flocks.

### **Yellow-streaked Greenbul *Phyllastrephus flavostriatus***

The endemic subspecies *uzungwensis* (Jensen & Stuart 1982) is restricted to the forests of the eastern escarpment of the Uzungwas where it is common in Mwanihana Forest and Chita Forest from c. 400 m and up to at least 1800 m. In Magombera Forest the widespread subspecies *tenuirostris* occurs, but so far no intergrades between *uzungwensis* and *tenuirostris* have been found. Unexpectedly this greenbul was not recorded from Kigogo Forest, though it does tend to avoid drier areas (e.g. Ukagurus and drier parts of the West Usambaras).

The Yellow-streaked Greenbul lives in all forest strata, from the undergrowth to the canopy, perhaps preferring the mid-stratum and canopy. It is usually seen in small monospecific parties.

### **Olive-flanked Ground Robin *Cossypha anomala***

This ground-dwelling thrush of highland forests has a limited range in the Uzungwas, the subspecies *grotei* so far known only from the southeastern parts, in Chita Forest Reserve at 1400 m and at Kigogo and Dabaga above 1700 m. In the Uzungwas it appears to prefer rather open forest types and even occurs in small, disturbed forest patches as well as gardens within Mufindi Tea Estate adjacent to Kigogo Forest. In the wet and more closed parts of Kigogo Forest it seems uncommon. The habitat preference of this species in the Uzungwas is very different from the situation on both Mount Rungwe to the southeast of the Uzungwas and in the Uluguru Mountains to the northeast, where it is fairly common in wet montane forest, in particular in vegetation with tree ferns *Cyathea* sp. (pers. obs., Stuart & Jensen 1985).

### **Iringa Akalat *Sheppardia lowei***

This inhabitant of the forest floor is endemic to a few montane forests in the Iringa-Njombe area. In the Uzungwas it has been recorded in small numbers from Chita Forest at 1450–1700 m, where it was found in wet forest. Elsewhere it is mainly associated with dry and sometimes fairly open forest. We recorded it in wet parts of Kigogo Forest, but it was much more numerous in the dry forest at higher altitudes, fairly common even in small, disturbed forest remnants between tea-fields at Mufindi Tea Estate adjacent to Kigogo Forest. It has also been recorded from Dabaga, generally a dry forest locality, but so far nothing has been noted on the habitat preference of this species here.

A single immature bird netted in Chita Forest (1500 m) on 1 November could indicate that this species breeds in the Uzungwas at the beginning of the hot season before the rains. For a discussion of possible competition with Sharpe's Akalat *Sheppardia sharpei*, see the next species.

### **Sharpe's Akalat *Sheppardia sharpei***

The nominate form of this species is a common resident of mid-altitude and montane forest throughout the Uzungwa Escarpment, except for Kigogo Forest where it appears to be absent. It is a bird of forest undergrowth, ranging from 600 m up to at least 1800 m. Several immature birds netted between late September and mid-November in both Mwanihana and Chita Forests suggest a breeding season at the end of the cold period, before the onset of the rains.



The absence of this akalat from the Mufindi and Kigogo area and also from montane forests round Njombe is peculiar, since it is otherwise a widespread species in east Tanzanian mountain forests and occurs north and south of this distributional gap. A possible explanation would be that Sharpe's Akalat has been displaced by the Iringa Akalat, at least in the drier forests. This forest robin of similar size and proportions as well as general behaviour appears to replace Sharpe's Akalat in all the montane forests where Sharpe's is absent. Only at Uwemba south of Njombe, at Dabaga (Ripley & Heinrich 1966, Britton 1980) and in Chita Forest both species have been recorded together. In the last locality Sharpe's Akalat greatly outnumbers the Iringa Akalat. It appears that they overlap where dry and wet forest types are found together.

#### Swynnerton's Forest Robin *Swynnertonia swynnertoni*

The very isolated subspecies *rodgersi* of this forest robin, separated from its two more southern forms in Zimbabwe and Mozambique by 1100 km, was discovered in Mwanihana Forest in 1981 (Stuart & Jensen 1981, Jensen & Stuart 1982). In 1984 another population of *rodgersi* was located in Chita Forest.

In the Uzungwa Mountains this species inhabits the ground stratum of mid-altitude and montane forest between 1000 m and 1700 m. In Mwanihana Forest it appears to be rare with a very narrow altitudinal range from 1000 m to 1200 m, while common in Chita, in particular in the montane parts between 1450 m and 1700 m.

It was often netted alongside Sharpe's Akalat and the Iringa Akalat which perhaps should be regarded as rather close competitors, the former occurring in high numbers at the same altitudinal range. As in Mwanihana, all individuals of Swynnerton's Forest Robin were caught lowermost in the nets, with Sharpe's Akalat up to 1 m above ground stratum. This perhaps indicates a form of ecological segregation, with Sharpe's Akalat perhaps mostly acting as a flycatcher in the vegetation just above the ground and Swynnerton's Forest Robin as a ground forager. The data collected so far give no clues to the ecological separation between Swynnerton's Forest Robin and the Iringa Akalat, nor to the much higher population densities of the former found in Chita compared with Mwanihana.



Figure 4. *Swynnertonia swynnertoni*, Chita Forest, 1984 (Photo: F. P. Jensen)

**Mrs Moreau's Warbler *Bathmocercus winifredae***

This Tanzanian endemic is found only in the Ukaguru, Uluguru Mountains and in Mwanihana Forest in the Uzungwas. It appears to be much less common and more local in the Uzungwas than in the Ukagurus and Ulugurus, and its altitudinal range (from 1300 m to 1700 m) is also more narrow. The rarity of this species in Mwanihana Forest is probably real, since it is a fairly easy species to detect due to its loud whistling duets. As in the Ukagurus and Ulugurus it is associated with dense undergrowth in small clearings often near streams. The birds are usually seen in pairs and keep low in the vegetation though avoiding the open ground.

**Red-capped Forest Warbler *Orthotomus metopias***

This species is common in the montane parts of Chita Forest and fairly common in Kigogo Forest. In the Uzungwas it has also been recorded from Dabaga and Mt Luhombero, but we have no indications on its abundance here.

The Red-capped Forest Warbler is an inhabitant of dense forest undergrowth, in Chita Forest found mainly in a wet forest type with many tree ferns *Cyathea* sp. In this forest type at 1700 m, we observed a pair building a nest in mid-November, which could indicate that the breeding season starts with the onset of the rains.

**Moreau's/Eastern Double-collared Sunbird *Nectarinia moreaui/mediocris***

The "double-collared" sunbirds recorded from Mwanihana Forest have so far been assigned to Moreau's Sunbird (Stuart *et al.* 1987) because specimens from this locality agreed in plumage colours with specimens from the Nguru Mountains, the type locality of *N. moreaui*. Other populations of double-collared sunbirds from the Uzungwas have been referred to *Nectarinia mediocris fuelleborni* (Britton 1980) with the type locality of *fuelleborni* being at Kalinga near Dabaga.

Recently A. Beakbane and E. Baker (pers. comm.) have pointed out that male Eastern Double-collared Sunbirds netted at Mufindi show considerable variation in plumage colours. This variation extends in some birds well into the concept of *N. moreaui*, calling in question the validity of this form in the Uzungwas. Until this matter has been thoroughly investigated we prefer to keep the systematic position of the double-collared sunbirds in the Uzungwas an open question.

Double-collared sunbirds are common in most montane forests of the Uzungwas from 1500 m up to at least 1900 m, though apparently uncommon in Chita Forest Reserve.

Double-collared sunbirds in the Uzungwas live at all forest strata, depending on flowering trees and shrubs, usually singly or in pairs, but sometimes gathering in small flocks at flowering trees and shrubs.

**Rufous-winged Sunbird *Nectarinia rufipennis***

This species is endemic to Mwanihana Forest and is fairly common here from 1000 m up to at least 1700 m, but there are also scattered observations of birds at 800 and even 600 m.

We were unable to locate this newly discovered species (Jensen 1983) in Chita Forest. This was all the more surprising as the distance between Mwanihana and Chita is only 150 km. Both forests seem to comprise much the same habitats.

For a more comprehensive discussion of the appearance and habitat selection of this species in Mwanihana Forest see Stuart *et al.* (1987).



**Thick-billed Seed-eater *Serinus (burtoni) melanochrous***

The very distinct and isolated subspecies *melanochrous* should probably be recognized as a species distinct from *burtoni* (Britton 1980). This bird is fairly common in Chita Forest at 1700 m and in Kigogo Forest and Dabaga at 1800 m. It seems to be confined to the uppermost altitudes of the montane forest where it lives in the undergrowth and mid-stratum, but sometimes also moves up into the canopy. It is a very quiet bird and is easily overlooked.

## Discussion

**Species rich understorey bird community**

A remarkable rich community of thrushes and babblers is found at Chita Forest Reserve, especially at high altitudes. At least nine species which are all ground-dwellers occur together from c. 1400 m up to 1700 m. There are six thrushes, White-chested Alethe, Olive-flanked Ground Robin, Iringa Ground Robin, Swynnerton's Forest Robin, Olive Thrush, Orange Ground Thrush; and three babblers (as defined in this paper), Dappled Mountain Modulatrix, Spot-throat Modulatrix and Pale-breasted Illadopsis. In addition, two thrushes and one babbler are found near and from time to time on the ground: Sharpe's Akalat, White-starred Forest Robin and African Hill Babbler. All in all 12 species of thrushes and babblers can be found together in a feeding guild at or near the forest ground in Chita Forest Reserve.

Most of the species in this guild are of a very generalized build with an un-specialized bill, strong legs and feet and a rather stout build suggesting an opportunistic feeding behaviour. Dowsett-Lemaire (1983) explains this with very broad foraging capabilities for the species involved. Their generalized build allow them to forage on the forest floor, act as foliage gleaners, moving around and picking from trunks and larger branches, picking from saplings, and with the smaller species also acting as flycatchers.

A number of the involved species are ant-followers, thus exploiting a superabundant, if rather local and in places sporadic, food resource. These include the White-chested Alethe, Olive-flanked Ground Robin and White-starred Forest Robin, but other species can from time to time act as ant-followers.

Extensive ecological studies are needed, if a complicated community structure such as the one depicted above are to be understood.

**Co-existence of *Apalis* species**

This group of warblers is well represented in the Uzungwa scarp forests with six species recorded. One of them, Yellow-breasted *Apalis* *Apalis flavida*, however, does not belong to the forest avifauna, though it is often recorded in the lowest altitudes, intruding into impoverished low level forests.

Based on the existing material, the ecological segregation of the remaining five species is not readily obvious. A certain altitudinal segregation limits the maximum number of *Apalis* species to three at any altitude in the study period. At the highest elevation minor differences in habitat selection is noted, with Chapin's *Apalis* confined to the canopy, Bar-throated *Apalis* preferring the forest interior at the lower mid-stratum or in the undergrowth, and with the Brown-headed *Apalis* mostly found in edge habitats, scrubs and smaller trees at the highest elevations.

Though a spatial segregation reduces competition, interspecific defence of territories

has been demonstrated to take place between Chapin's Apalis and Brown-headed Apalis on the Nyika Plateau in south-central Africa (Dowsett-Lemaire 1983). Though not directly observed, similar mechanisms are likely to take place within the Uzungwas as well.

At lower altitudes, where White-winged, Black-headed and Chapin's Apalis are found, an ecological segregation is less obvious, since all species are primarily canopy feeders. However, one species, Chapin's Apalis, is uncommon below 1500 m (in the study periods), thus hardly showing altitudinal overlap with the other two species found here. White-winged Apalis seems to prefer the tops of large, broad crowned trees, whereas Black-headed Apalis regularly is recorded in edge habitats and in the forest mid-stratum.

In general, however, further and more detailed studies of the ecological requirements of the forest avifauna species are needed in order to get a comprehensive and more secure picture of the ecology of the bird communities found in the Uzungwas and elsewhere. Major ecological studies of forest bird communities carried out so far in eastern Africa include studies in the Usambara Mountains (Moreau 1935, Stuart 1983) and in forest patches in Malawi (Dowsett-Lemaire 1983, 1989).

### Species diversity and endemism in the Uzungwa Mountains

In a review of the zoogeography of the montane forest avifauna of eastern Tanzania Stuart *et al.* (in press) redefined the limits of the "montane forest groups" in Africa, as defined by Moreau (1966). Within these groups it is said that the montane forest avifaunas have a similar composition. Stuart *et al.* (in press) undertook a numerical and statistical analysis of the montane forest bird distribution based upon newly available data, as well as other unpublished records. In that paper the "Tanganyika-Nyasa Montane Group" as defined by Moreau (1966) was renamed "the East Coast Escarpment" and now centred on the mountains of eastern Tanzania and northern Malawi from the Usambaras, south to the Nyika and Viphya Plateaus.

It is likely that the Matengo Highlands in southern Tanzania and the Njesi Plateau in northern Mozambique also belongs to the East Coast Escarpment, but the avifauna of these localities is not well known (Stuart *et al.* in press). In the present paper the limits of forest areas are changed slightly as the "East Uzungwas" and "Mufindi" areas have been treated as parts of one forest area defined as "the Uzungwas". Today the forest at Mufindi including the Kigogo Forest and the scarp forest above Chita is not continuous, but we believe this is due to human disturbances of a previous continuous forest during this century, and we therefore prefer to treat these forests as part of one area.

In Table 3 the number of montane forest species and endemics to the East Coast Escarpment found in the larger forest areas within the East Coast Escarpment Group is presented (modified from Stuart *et al.* (in press)). From this table it is clear that the Uzungwas have the largest number of montane species and endemics within the East Coast Escarpment Group. Together with the presence of one endemic species and four endemic subspecies (Table 4.) this underlines the great importance of the Uzungwas as a centre of endemism and diversity of forest birds in the East Coast Escarpment Group.

The Uzungwa Mountains should thus be added to the already identified speciation centres of the Usambara Mountains and Uluguru Mountains, as proposed by Stuart *et al.* (1987).

Table 3. *Numbers of montane forest birds and endemics to the East Coast Escarpment Group (modified from Stuart et al. (in press))*

|              | Number of<br>montane<br>species | Number of<br>East Coast<br>Escarpment<br>endemic species |
|--------------|---------------------------------|--|
| Usambara a)  | 41                              | 9  |
| Nguru        | 31                              | 7  |
| Ukaguru      | 28                              | 6  |
| Uluguru b)   | 41                              | 9  |
| Uzungwa c)   | 45                              | 10   |
| Mount Rungwe | 35                              | 3  |

a) Rodgers & Homewood (1982)  
b) Stuart & Jensen (1985)  
c) this study

Table 4. *Endemism of forest birds in six forest areas in Tanzania*

|              | Number of endemic<br>species in each<br>forest | Number of endemic<br>subspecies in each<br>forest |
|--------------|--|---|
| Usambara     | 2  | 4   |
| Nguru        | 0  | 0   |
| Ukaguru      | 0  | 0   |
| Uluguru      | 2  | 5   |
| Uzungwa      | 1  | 4   |
| Mount Rungwe | 0  | 0   |

### Recommendations for future field work

The fieldwork carried out so far has revealed that the forest patches in the Uzungwa Mountains stand out as some of the most important within the East Coast Escarpment Group with respect to forest avifaunal diversity and endemism. The picture, however, is most likely to be far from complete in spite of the time spent in the different parts of the Uzungwas. Much work is still needed, especially at other times of the year, the main part of the fieldwork so far carried out from July to November.

Also, more attention should be paid to remaining forest patches on the eastern scarp of the Uzungwas in between the relatively well-worked Mwanihana and Chita forests parts. As it shows now a number of distributional problems have been documented which, on basis on the present knowledge, must remain unsettled.

Thus, further field work may elucidate if the observed differences between the forest

bird communities found at Mwanihana and Chita, a mere 150 km further to the southwest along the escarpment, are real. Or, if the observations gathered so far are influenced by the fact that the main part of the field work in Mwanihana and Chita have been carried out at slightly different seasons—mainly July–Aug in Mwanihana, compared to Oct–Nov at Chita, see Table 1. It is well documented that altitudinal migration between seasons (Stuart & Jensen 1985, Stuart *et al.* 1987) and vocal activity levels in relation to the reproduction cycles may seriously alter the detectability of species. Even with standardized observation methods and netting efforts the picture collected at different parts of the year may then not be comparative.

With this precaution in mind, the apparent difference between the bird communities of Mwanihana and Chita may not be real, or at least not as evident as judged by the present data (Table 2). Thus, it remains to be seen if the apparent absence of Rufous-winged Sunbird and Green-headed Oriole in Chita is real, and likewise whether the Red-capped Forest Warbler, Abyssinian Hill Babbler and *Iringa* Ground Robin can be found in Mwanihana with more field work done at another part of the year.

Despite five weeks of intensive netting and observation in Chita in 1984, no “double-collared” sunbird could be traced. As any other wet scarp forest in eastern Tanzania holds a sunbird species belonging to the *Nectarinia regia* superspecies (ref. Hall & Moreau 1970), the apparent absence of both Rufous-winged Sunbird and any double-collared sunbird at Chita was very unexpected. However, during a brief visit to Chita in July 1989 D. Moyer (*in litt.*) found a double-collared sunbird, thus filling the distributional gap of this superspecies in the wet forests at the southern end of the Uzungwa Mountains. This example serves to illustrate the need for still further work in the Uzungwas, if the occurrence of the forest avifauna is to be pictured completely. It further serves to make the necessary precautions when the present data are evaluated.

As the main scope of the present work was to map the distribution and altitudinal zonation of the forest bird species in otherwise poorly known forest localities, there is plenty room left for further studies of the forest bird communities, especially studies on the ecological requirements of species and species groups. As Dowsett-Lemaire (1989) points out, local gaps in species distribution can often be explained on an ecological basis in relation to habitat requirements, interspecific competition etc. Thus, further and more wide-spectrum work in the Uzungwas is very likely to produce answers to some of the questions and problems presented in this paper.

With a view to nature conservation priorities, future field work efforts should preferably concentrate on any remaining wet scarp forest patches between Mwanihana and Chita. To the best of our knowledge, the forest patches at Matundu and Iyondo (as listed by Collar & Stuart 1988, see map in Rodgers & Homewood 1982) have never been visited by ornithologists. Any reports on the forest avifauna found in these parts of the Uzungwa Mountains are most welcome. At the same time visiting ornithologists should try to map existing and potential threats to the remaining forest tracts in order to help making the needed priority when spending limited conservation resources on this extremely important area.

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